

The Knowledge Bank at The Ohio State University

Ohio State Engineer

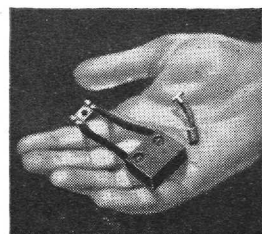
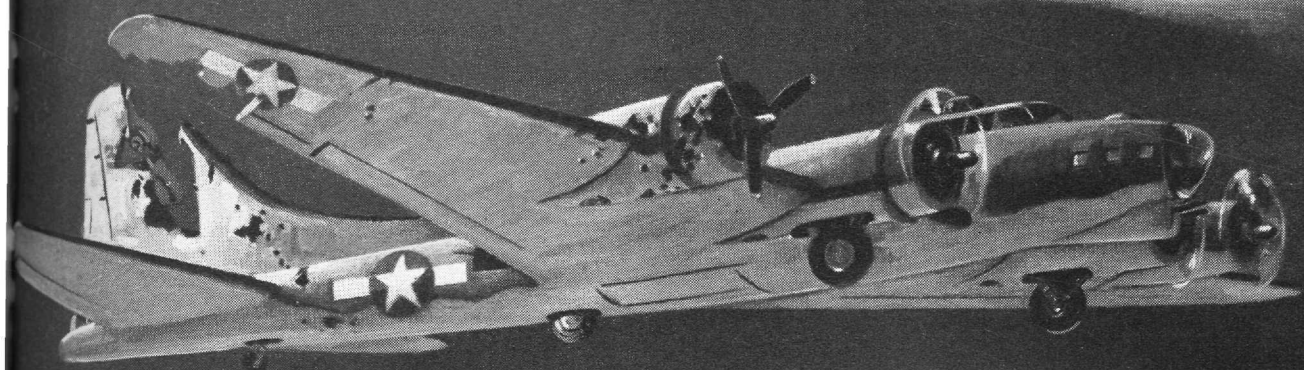
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Years ago motor and generator brushes had copper strips or wire bristles to conduct electricity from stationary to rotating parts—that's how they got their name. Carbon is now the material for all sizes of these brushes.

THEY HELP BRING THE GIANTS HOME

ONE of the "little things" that are contributing greatly to the safety and welfare of our fighting men, is a special kind of carbon brush used in high-altitude planes. These brushes are essential to the generators and motors that supply energy for the radios, firing apparatus, gun turrets, bomb bay doors, landing gear, and other equipment of the planes. A heavy bomber has more than 40 of these devices requiring brushes.

Ordinary brushes disintegrate in a few minutes at altitudes where the air is "thin" and dry. A brush that would be dependable from take-off to ceiling and would have a life of 100 hours or more—had to be found. It came from the laboratories of NATIONAL CARBON COMPANY, INC., a Unit of UCC.

Carbon is useful in many other ways to Americans at war. Therapeutic lamps, which employ the carbon arc, are helping to restore health to sick and wounded men. Activated carbon in gas masks, by absorbing toxic vapors, is ready to save lives.

In the two-way radio telephone—the walkie-talkie and the handy-talkie—and in hearing aids for the deafened, carbon has another role. Carbon is essential in the small, powerful batteries that are used in these devices.

Teachers, designers, and operators of electric motors, generators, and rotary converters are invited to send for "Modern Pyramids" P-6. This is a series of pamphlets containing practical suggestions on the performance, characteristics, operation, and application of electric motor brushes. There is no obligation.

BUY UNITED STATES WAR BONDS AND STAMPS

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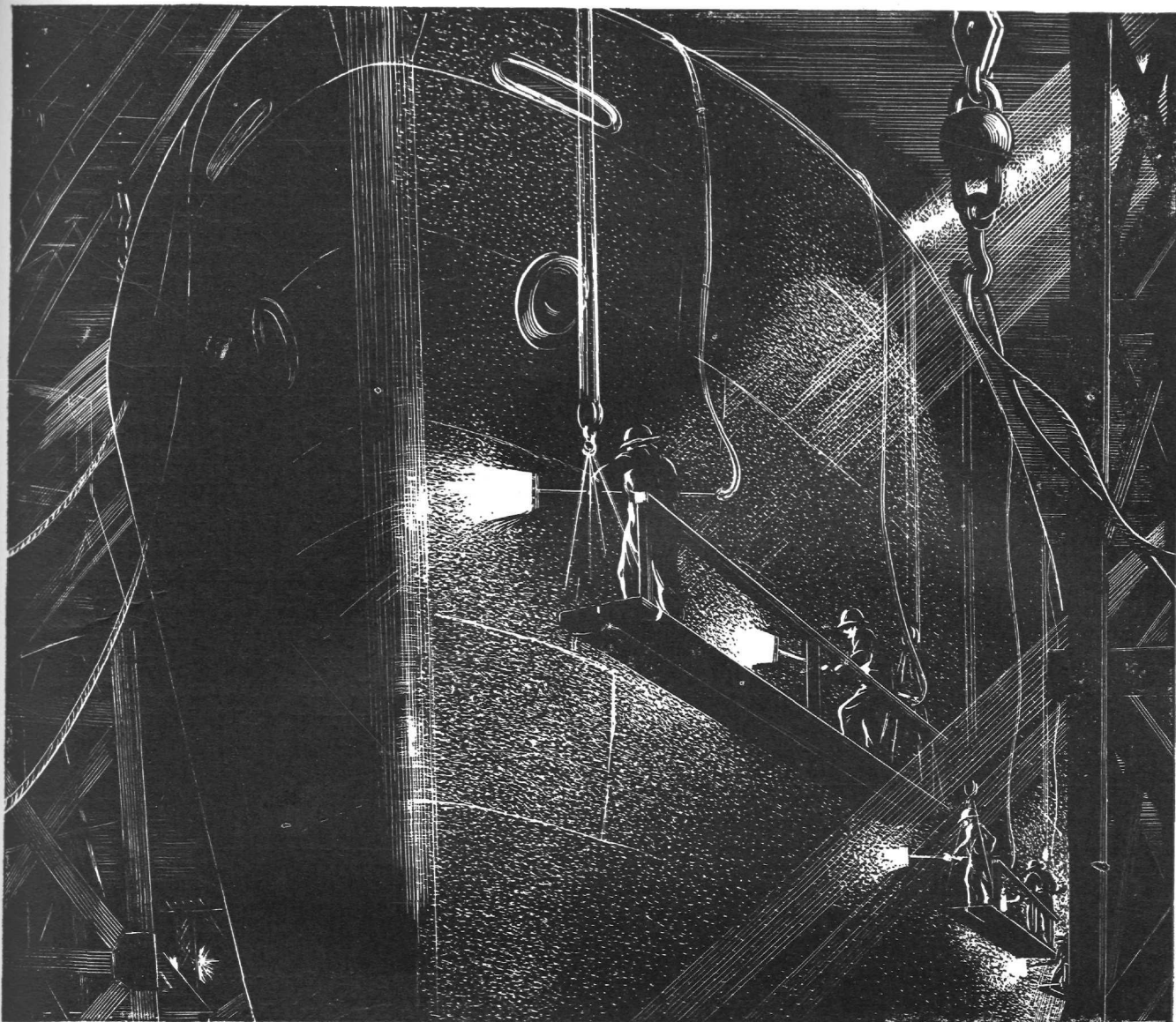
TO THE UTTERMOST ENDS OF THE EARTH

And so, the roads lead away to the uttermost ends of the earth . . . to the South Seas of Captain Cook and Admiral Halsey . . . to the Orient of the Great Khan and General Chiang Kai-shek . . . to the England of Wellington and Churchill. Along every mile of those roads you will find American boys reading American newspapers and magazines . . . "including all the ads, three times"; and American books . . . "right out of their covers."

It's a long road that has no turning, and turn these roads surely will . . . to bring our victorious warriors home to the most wonderful land they will see in all their travels. The doctrine of the divine right of kings is no longer accepted; and the age of unbridled autocracy—the day of irresponsible and ruthless force—is rightfully condemned. The new generation is coming up, inspired with a broader understanding of the world and of human justice—which will lead the people along the roads of intelligence and four-fold freedom for all.

In town and country you see these happy leaders of the new world—pedalling their bikes along the roads with laughter and eager chatter—exploring the endless wonders of the woods and the fields—winning hard-fought but fair and friendly contests on the sandlots. Brimming with healthy curiosity, they demand to know, these boys and girls: "What? Why? When? Where? Who? What does Kettering say? Compton? What is the air-distance?" Engineers, here's a coming new market that demands your best!

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THIRTY-TWO SOUTH FOURTH STREET



Scrubbing Steel Ships with Brushes of Flame

Painting a big modern cargo or troop ship is an expensive and important finishing operation. To assure the longest possible paint life, many large ships are first thoroughly cleaned with "brushes" of oxyacetylene flame — a steel-conditioning treatment that produces a clean, smooth surface unblemished by rust or scale.

Moreover, this modern

steel-cleansing method drives occluded moisture from the steel, thus making it more receptive to paint and making paint jobs last longer. As a result, repainting becomes a much less frequent necessity...maintenance costs are considerably reduced.

In addition to cleaning steel, the oxyacetylene flame has many other uses. It cuts metals into any shape quickly...sur-

face hardens them at points of wear...welds them into strong parts. With the electric arc, it constitutes a remarkably fast, versatile metal-fabricating team.

If you would like to receive our informative publication "Airco in the News," we shall be glad to send a free copy. Write to Mr. G. Van Alstyne, Dept. C. P., Air Reduction, 60 East 42nd Street, New York 17, N. Y.

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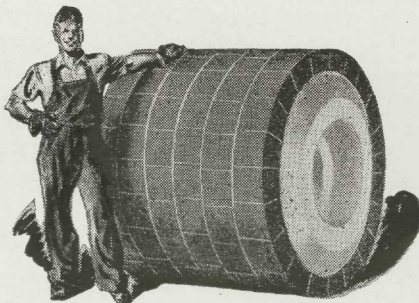
OXYGEN, ACETYLENE AND OTHER ATMOSPHERIC GASES • GAS WELDING AND CUTTING APPARATUS • CALCIUM CARBIDE
ARC WELDING MACHINES AND SUPPLIES • CARBON DIOXIDE • "DRY ICE" • ANAESTHETIC AND THERAPEUTIC GASES AND APPARATUS

An African Victory that might have hung by a tooth!



1. At one of the critical engagements of the North African campaign the American officer in command of a vital sector developed a woe of a toothache. Now he certainly would have won that victory, toothache or no toothache. But he didn't have to go into battle distracted by that pain-thumping molar because there was a dental unit right at hand to take care of him. Whether they are working close to the battle front or on your pet incisor here at home, dentists generally use tiny abrasive points such as are made by Carborundum.

2. The Carborundum Company manufactures abrasive wheels for every grinding job, from little dental points to mammoth five-foot stones that grind logs to pulp for paper making. And in between are wheels by Carborundum for all the production grinding operations that are doing so much to speed the war effort.

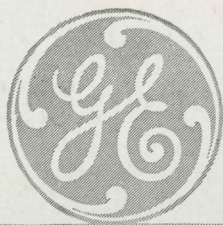


3 The complete abrasive and refractory service that Carborundum offers industry will be of help to you in your work in the field. When you are in industry feel free to call on us for assistance. The Carborundum Company, Niagara Falls, New York.



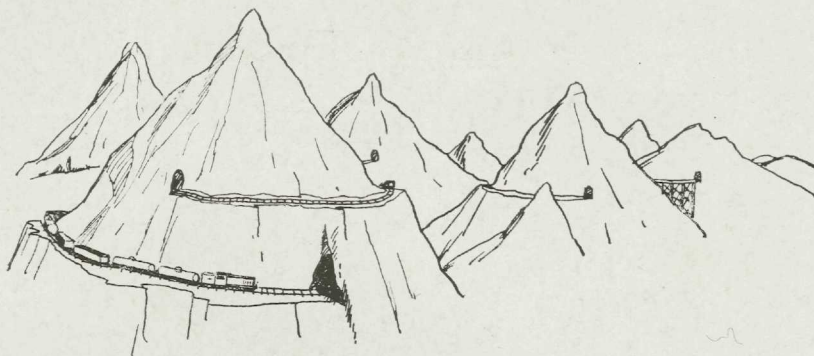
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ABRASIVE PRODUCTS

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Campus News

RESEARCH AND ENGINEERING KEEP GENERAL ELECTRIC YEARS AHEAD



SUPPLY LINE

THE Trans-Iranian Railroad from Bandar Shah to Teheran is a tough part of the supply route to Russia via the Near East. It goes up practically all the time, one mile above sea level in 150 miles, and has 135 tunnels in that distance.

For nearly two years a fleet of Alco-G.E. diesel-electric locomotives have hauled most of the equipment moving via this route. Special locomotives with two 3-axle trucks instead of the usual 2-axle trucks are used for the job. Equipped with six motors—one on each axle—they are making 650-mile runs without servicing stops, through blistering sandstorms and over freezing mountains.

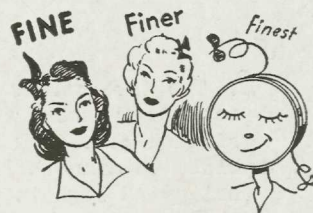
Despite all this, the diesel-electrics have required only periodic inspection and normal maintenance. Their needs have been adequately cared for by natives, trained and supervised by American railroaders working with limited equipment.



FAST BABY

THE chances are that no one has ever seen a car going 9,900 miles an hour. To do that the wheels of an ordinary car would have to spin 120,000 revolutions per minute. That's fast—the car that will do it hasn't been designed yet, but there is a new G-E motor that can spin that rapidly. And what's more it can be brought from a standstill to full speed in one second.

This new motor, weighing seven pounds and developing three horsepower, can be held in the palm of the hand. The conventional motor of that power weighs 105 pounds. This new motor is being used for the finish-grinding of small holes on a special war job.



IF the spool of wire seems to be smirking, it has a good reason, for it has won hands down in a contest of dimensions with hairs from brunette and blonde heads.

It is Formex wire, and in its smallest diameter it is nearly three times as fine as some human hair, being only .001 of an inch in thickness. A G-E development, Formex has other qualities besides its fineness which make it vastly superior to the enamel-insulated wire it replaces. It has great resistance to abrasion; does not crack when subjected to high temperatures; does not become harder or more brittle after being subjected first to heat and then to cold. *General Electric Company, Schenectady, N. Y.*

Hear the General Electric radio programs: "The G-E All-girl Orchestra" Sunday 10 p.m. EWT, NBC—"The World Today" news, every weekday 6:45 p.m. EWT, CBS.

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